

What is claimed is:

1. A rare earth doped fiber coil, said rare earth doped fiber coil comprising:

a rare earth doped optical fiber having a rare-earth doped core surrounded by a cladding with outer clad diameter of less than 100 μ m, said rare earth doped optical fiber having a length of 10 m to 50m and being coiled with a bend radius of less than 40mm.
2. The rare earth doped fiber coil according to claim 1, wherein said clad diameter is in the range of 70 μ m to 95 μ m.
3. The rare earth doped fiber coil according to claim 1, wherein said clad diameter is in the range of 72 μ m to 90 μ m
4. The rare earth doped fiber coil according to claim 1, wherein said clad diameter is in the range of 75 μ m to 85 μ m.
5. The rare earth doped fiber coil according to claim 1, wherein said rare earth doped optical fiber is an Er doped optical fiber.
6. The rare earth doped fiber coil according to claim 5, wherein said bend radius is between 8mm and 35mm
7. The rare earth doped fiber coil according to claim 5, wherein said bend radius is between 8mm and 20mm.
8. The rare earth doped fiber coil according to claim 5, wherein said bend radius is between 10mm and 15mm.

9. The rare earth doped fiber coil according to claim 1, wherein said bend radius is between 8mm and 20mm.
10. The rare earth doped fiber coil according to claim 1, wherein said bend radius is between 10mm and 15mm.
11. An optical amplifier comprising: a length of rare earth doped amplifying fiber, said amplifying fiber having a rare-earth doped core surrounded by a cladding with outer clad diameter of less than 100 μ m, said rare earth doped optical fiber having a length of 10 m to 50m and being coiled with a bend radius of less than 40mm.
12. The optical amplifier according to claim 10, wherein said rare earth doped optical fiber is an Er doped optical fiber.
13. The optical amplifier according to claim 10, wherein said bend radius is between 8mm and 20mm.
14. The optical amplifier according to claim 10 wherein said clad diameter is between 70 μ m and 95 μ m.
15. The optical amplifier according to claim 10 wherein said outer clad diameter is between 72 μ m and 90 μ m.
16. The optical amplifier according to claim 10 wherein said outer clad diameter is between 75 μ m and 85 μ m.